

Julia May

07-7-4

June 21-22, 2007

The Largest California Industrial
Greenhouse Gas Source is missing
from the Early Action Items:

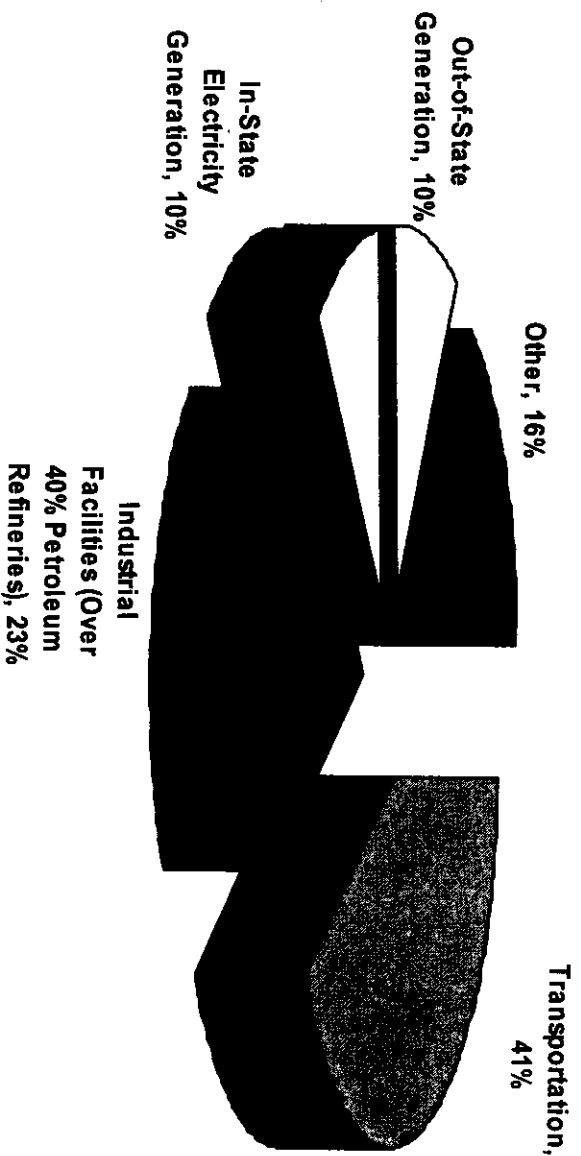
**OIL REFINERY GHGs are
BIG AND GETTING BIGGER**

CBE, Julia May, Testimony to CARB, June 21, 2007



Oil Refineries emit almost 10% of California's GHGs:

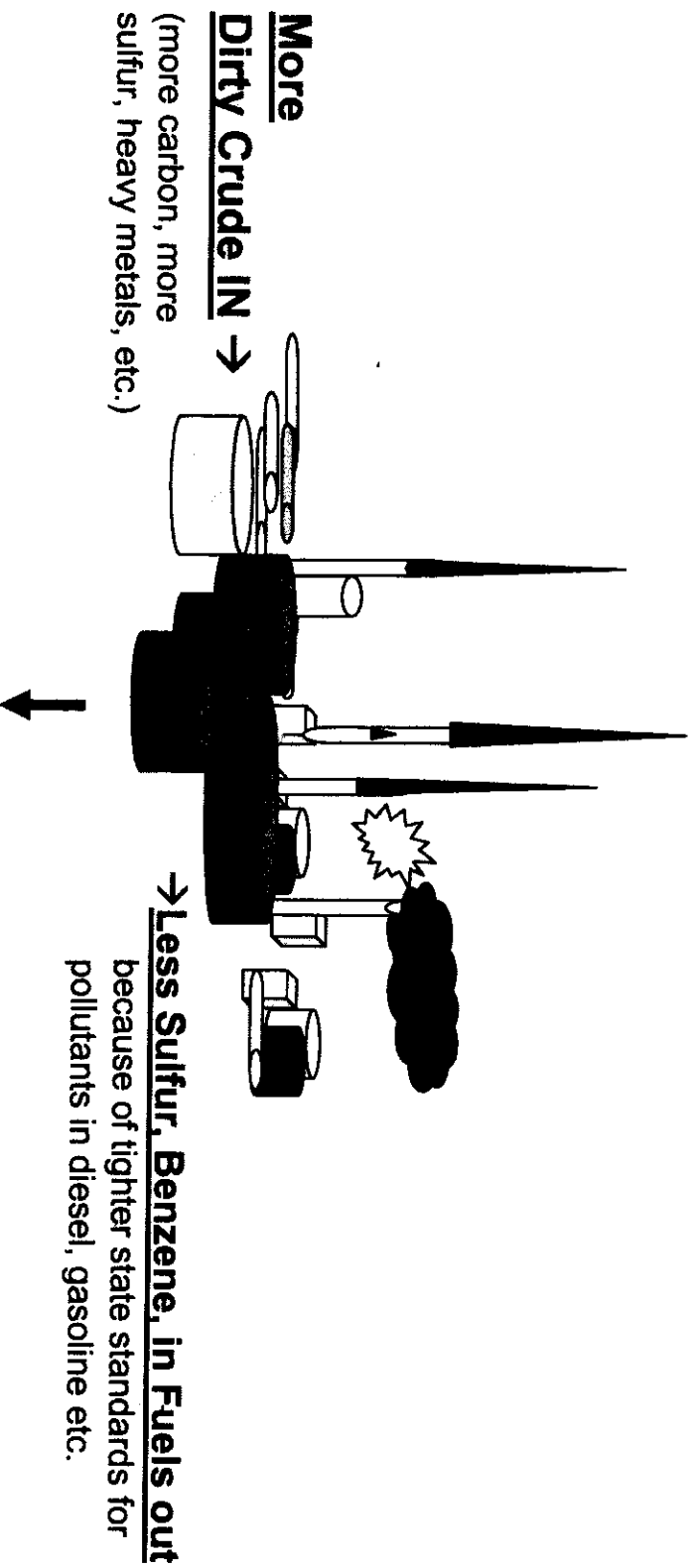
California's Greenhouse Gas Emissions



Source: CA Energy Commission

<http://www.cpuc.ca.gov/ccworkshop/Juliet-fitch.ppt>

OIL REFINERIES are expanding & switching to Dirtier Crude Oil



- ***More Carbon, SO_x, H₂S, in the refinery, & more risk of upset***
- ***More CO₂*** (more energy-intensive cracking, coking, hydrogen plants, hydrotreating, sulfur recovery)



<u>A FEW EXAMPLES:</u> CA Refinery Hydrogen Plant Expansions (not comprehensive)		CO2 Emissions Increases
2007 ConocoPhillips Rodeo --120 MMscf		at least 1.25 MM metric tpy
2007 Chevron Richmond -- 100 MMscf		at least 0.90
2007 Valero Benicia -- unknown MMscf		.0.86**
2003 Chevron El Segundo -- 90MMscf		0.94*
1999 Air Products Wilmington for area refineries -- 96 MMscf		1.00*
1996 Air Products for Ultramar, Wilmington --83 MMscf		0.86*
493 MMscf (million standard cubic feet)		≈ 5.8 MM metric tons

* CO2 emissions not yet available, estimated based on plant hydrogen capacity and assumption that emissions are approximately proportional to ConocoPhillips CO2 from Final EIR. This may underestimate emissions. For example, Chevron may be oversizing hydrogen plant for exporting, and not including these CO2 emissions in total. ConocoPhillips may be as well.

** Planned Valero Benicia facility's size is currently unknown -- used the smallest size above as approximation

Require refinery energy efficiency audits & implement results:

A few examples of readily available refinery pollution prevention measures:

- Stop refineries dumping through Pressure Relief Devices to atmosphere (use gas recovery)
- Remove exemptions for refinery Methane emissions in smog controls
- Require clean alternatives to grid electricity used at refineries
- Stop wholesale refinery dirty crude expansions without serious consideration of alternatives
- Control grandfathered sources such as Heaters and Boilers
- Apply Lawrence Berkeley Labs energy efficiency measures

—These measures reduce GHGs & smog and are good for jobs too!

Bad practices can be fixed through audits

- Flare emissions in the Bay Area were estimated at 0.1 tons per day before audit – but after audit, emissions were found to be many tons per day of VOCs, SOx, and other criteria pollutants.
- Smog regulations were adopted; this also prevented CO2 and methane emissions.
- Stopping other refinery wasteful practices carries out ARB's existing work to protect public health AND prevents CO2 and methane emissions
- Please add CBE's ground-up refinery energy audit to the Early Action Measures to address this huge and dirty source of GHGs, criteria pollutants, and toxics



REFERENCES

Slide 2:

Climate Change and Energy Efficiency in California, California Public Utilities Commission, Joint West Coast Public Utility Commissions, 2006 Energy Efficiency Workshop, Presented by Julie Fitch, CPUC Director of Strategic Planning, December 1, 2006

Slide 3:

ConocoPhillips Rodeo Refinery Clean Fuels Expansion Project, Final Environmental Impact Report, Volume 1 – Response to Comments, Contra Costa County April 2007, Community Development Department, SCH 2005092028, LP 052048, page 2-6

Draft Chevron Energy and Hydrogen Renewal Project, Draft Environmental Impact Report, State Clearinghouse No. 2005072117, City of Richmond Project No. 1101974, Volume 1, Prepared for: May 2007, City of Richmond, Page 4.3-8, <http://ca-richmond.civicplus.com/DocumentView.asp?DID=1795>

Valero Energy Corp./TX-8-K-For 4/26/07-EX-99.1, <http://72.14.253.104/search?q=cache:xD8PI7KIHQJ:www.secinfo.com/dsryp.u8Tc.d.htm+SEC+Info+-+Valero,+4-26-07,+Benicia,+new+hydrogen+plant&hl=en&cl=clink&cd=1&gl=us>

Air Products and Ultramar Sign Hydrogen Agreement, Additional Hydrogen Supply for Ultramar's Wilmington, Calif. Refinery, January 16, 2002, http://www.airproducts.com/PressRoom/CompanyNews/Archived/2002/02023_JAN16.htm

Slide 4:

Contact us for more information on CBE research on the large number of refinery emissions sources and pollution prevention options – too numerous to cite.

Profile of the Petroleum Refining Industry in California, Ernst Worrell and Christina Galitsky, Ernest Orlando Lawrence Berkeley National Laboratory, LBNL-55450, Environmental Energy Technologies Division, California Industries of the Future Program, March 2004, <http://ies.lbl.gov/iespubs/55450.pdf>

Energy Efficiency Improvement and Cost Saving Opportunities For Petroleum Refineries. An ENERGY STAR Guide for Energy and Plant Managers, Ernst Worrell and Christina Galitsky, Lawrence Berkeley National Laboratory, Environmental Energy Technologies Division, February 2005, Sponsored by the U.S. Environmental Protection Agency, LBNL-56183